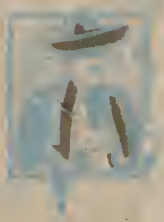
# U.S.G. Co's. Mexican Graphite Paint

## Its uses and users



THE UNITED STATES
GRAPHITE COMPANY
SAGINAW, MICHIGAN, U.S.A.

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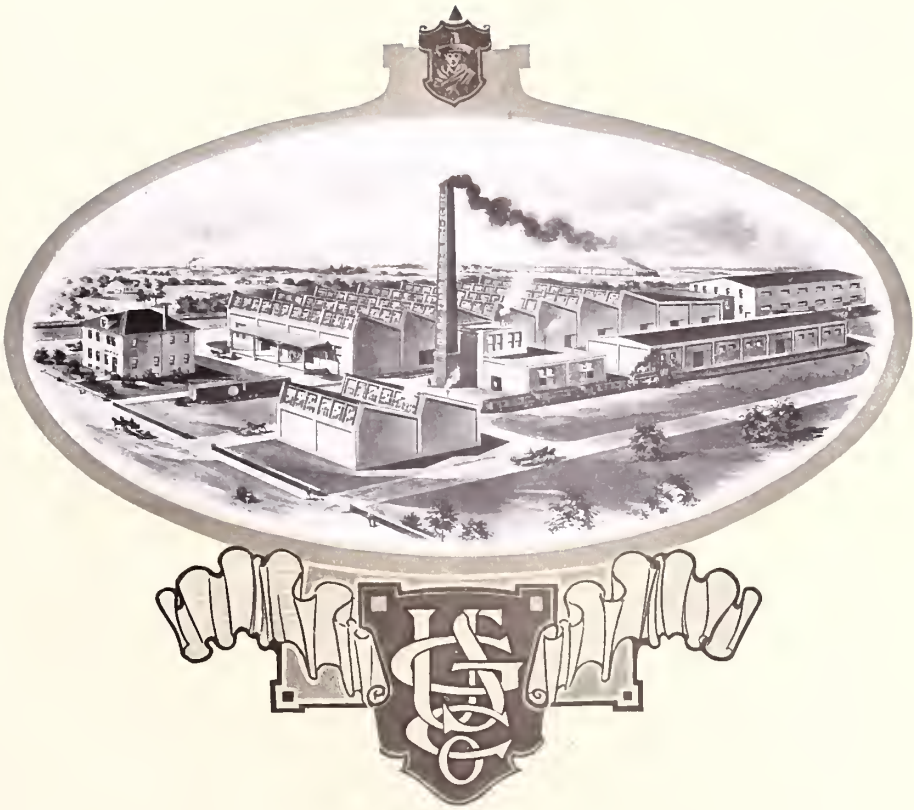
# U.S.G.Co's. Mexican
# GRAPHITE PAINT
## Its uses and users

THE UNITED STATES
GRAPHITE COMPANY
GENERAL OFFICES AND FACTORY
SAGINAW, MICHIGAN, U.S.A
MINES IN SONORA, MEXICO



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THE UNITED STATES GRAPHITE COMPANY
Saginaw, Michigan, U. S. A.

# INTRODUCTORY

REALIZING that in treating of paints—especially of what are termed protective paints—the tendency with many is to theorize rather than to deal with actualities concerning the particular paint under consideration, we offer within the pages of this booklet only such facts pertaining to the Graphite Paint which we make, as have been established beyond a doubt by authentic data collected by ourselves during the years of our experience, and in presenting these facts—and they are facts—it will be observed that we talk right from the shoulder in good, plain English avoiding as far as possible the technical verbiage which has more significance in the Laboratory than in the Office and which is ofttimes employed by Manufacturers of questionable integrity to masquerade a nostrum as the real thing.

The different structures herein reproduced will not only convey some idea of the varied and extensive use of *U. S. G. Co.'s Mexican Graphite Paint* but will also serve as *prima facie* evidence of the fact that this paint is favorably regarded by Architects and Engineers of national repute.

We hope that our effort in this direction may be of some service to those in search of a paint which really protects.

**THE UNITED STATES GRAPHITE COMPANY**
**Saginaw, Michigan, U. S. A.**

# U . S . G . Co's. MEXICAN GRAPHITE PAINT

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# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

Kohl Building Hyman Building Keil Building Baruch Building
San Francisco, California

# U . S . G . Co's. MEXICAN GRAPHITE PAINT

## ABOUT GRAPHITE

ALTHOUGH graphite—also called plumbago and black lead—is perhaps applied to a greater diversity of uses than any other mineral, we probably know it best in the form of common, ordinary, every-day "lead" pencils, where, as we all know, it is the whole thing, for a pencil is good or bad as the graphite of which it is made is uniformly pure or otherwise.

Some of us, too, know it in the form of graphite paint and favorably or unfavorably as our experience has been with paint made from pure or impure graphite.

Two Formations of Graphite

There are two formations of graphite—*Crystalline* or "flake" and *Amorphous* or "non-structural." It is the latter which must be used for pencil making and which for reasons hereinafter given is conceded the superior for paint purposes.

To be suited to pencil making graphite must be pure—*uniformly* pure—and capable of the most minute pulverization so as to permit of its intimate incorporation with other materials which, it will be observed, are the same considerations essential to good paint making graphite.

Flake graphite is not available for pencil making because it is incapable of fine pulverization and this is one reason why its presence in paint is undesirable. Further objections will be stated later.

Amorphous vs. "Flake" Graphite

Amorphous graphite on the other hand is susceptible of reduction to impalpable and gritless fineness and is of a nature to combine readily and intimately with other materials—in pencil making with clays and in paint grinding with the vehicle.

Thus far, however, it has not been found possible to produce a satisfactory pencil with artificial graphite which though amorphous in nature seems to lack uniformity and to contain more or less grit, probably due to the fact that Man, clever as he is, cannot transform coal into as good graphite as is produced in Nature's Laboratory.

Purity and Absolute Uniformity of Mexican Graphite

Regarding, then, the pencil as the graphite product most sensitive to impurities and lack of uniformity in the graphite used in its production and considering the loss which must fall on the pencil maker through the presence of even a small percentage of objectionable foreign matter in even a single batch of leads, there is considerable significance in the fact that for the past fifteen years not less than eighty per cent. of the World's pencil graphite has been taken from one mine and that mine, located in the State of Sonora, Mexico,

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

Meyerstein & Rothchild Building
San Francisco, California

# U . S . G . Co's. MEXICAN GRAPHITE PAINT

is owned and operated by ourselves. This means that all of the larger pencil makers both in this country and abroad are and have for years been under contract with *The United States Graphite Company* for the most important material entering into the manufacture of their product—and why? Simply because experience has taught them to look to us for *the best* which with them stands for purity and absolute uniformity—otherwise hard, gritty pencils with the attending loss must inevitably result.

## MEXICAN GRAPHITE

Peculiarly Adapted to Paint Making

As has been intimated, the inherent qualities of graphite suitable for pencil or paint making are identical one with the other—that is to say the graphite best adapted to either use must be (1) pure, (2) susceptible of minute pulverization, (3) of a nature to incorporate intimately with other materials and (4) absolutely uniform in all these respects.

Our relation to the pencil industry of the World has already been stated and in itself is good evidence that we have the right sort of a pigment on which to build a graphite paint possessing in the greatest degree all of the many advantages afforded by carbon coatings—and that is exactly what we offer in

## U. S. G. CO'S MEXICAN GRAPHITE PAINT

The pigment in this paint is Mexican Graphite mined by ourselves, amorphous in formation and analyzing 85 per cent. pure *natural* graphite—this we *guarantee*.

It is an absolutely inert substance which, by reason of its purity, is impervious to any known exposure—that is to say besides exerting no destructive influence on the vehicle or corrosive action on metal it is unaffected by smoke, water, brine, acids, alkali, extreme temperatures, steam, moisture, sulphur fumes or, in fact, by any chemical or climatic condition thus constituting the ideal protective pigment.

Mexican Graphite as a Pigment

Amorphous in formation, Mexican Graphite can be and is pulverized and air-floated (by a special process of our own) to an impalpably fine and gritless powder which is then re-ground in oil with which, being finely divided, it unites readily and so intimately that when finally reduced to ready-for-use consistency it does not, like graphite (?) pigments carrying a large percentage of silica, etc., precipitate to a hard mass at bottom of package. Its light specific gravity also contributes to this end.

The action of crystalline or flake graphite, however, is very different for unlike the amorphous product it is, by reason of its fibrous-like micaceous nature, both an exceptionally difficult ma-

# U . S . G Co's.
# MEXICAN GRAPHITE PAINT



Stockton National Bank
Stockton, California



Electrical Building
San Francisco, California

terial to grind to even a reasonable degree of fineness and utterly incapable of the *uniform* reduction so essential in a pigment intended to form the base of a protective paint. Then, too, no matter how finely pulverized it remains *always* a "flake" similar in form to finely divided mica or fish scales, a formation which the reader will recognize as less capable than air-floated amorphous graphite of combining with the vehicle in such a way as to result in the solid, opaque paint film necessary for the exclusion of moisture and gases from the surface which it covers and is supposed to protect.

Objections to "Flake" Graphite as a Pigment

Furthermore a microscopic examination of a paint film carrying crystalline graphite will reveal the fact that instead of overlapping each other and disposing of themselves in a manner similar to shingles on a roof or scales on a fish, as is alleged by a certain prominent maker of graphite paint, the sharp edges of these little scale-like flakes protrude after the vehicle has become oxidized thus creating a rough and more or less porous coating which catches and absorbs moisture thereby permitting it, together with destructive gases, to penetrate to and corrode the surface which it is desired to protect, this condition being apparent even when two and three coats have been applied.

The "Fish Scale" Theory Exploded

So all things considered, it is evident that graphite of the crystalline or flake variety is less desirable for paint purposes than amorphous or non-structural graphite.

Of amorphous graphites there are (if one wishes to regard "graphitized" anthracite coal or "artificial graphite" as graphite) two sorts—(1) natural and (2) artificial.

The one is produced by Nature, the other by Man.

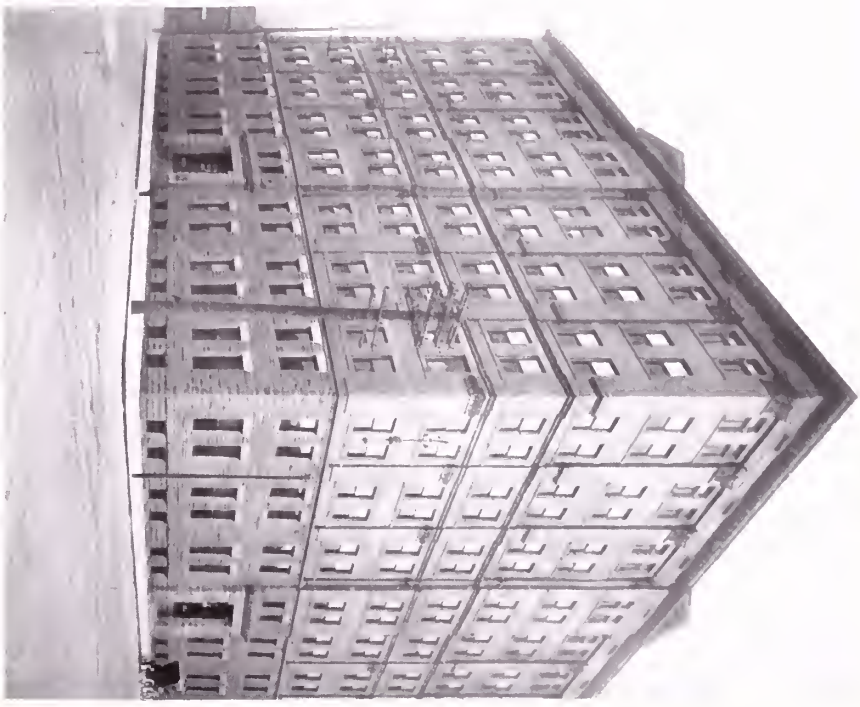
We have already seen that the manufacturers of that graphite product most sensitive to the presence of foreign matter and lack of uniformity, the lead pencil, continue in the use of natural graphite notwithstanding that the price of the artificial product is considerably less—a fact of no little significance when it is further known that we ourselves could purchase this "graphite" made from anthracite coal for less than it costs us to mine in Mexico, transport to Michigan and prepare for use the graphite of which *U. S. G. Co.'s Mexican Graphite Paint* is made.

With Regard to Artificial "Graphite"

Then, too, although it is true that in some cases this artificial graphite will analyze as high as 90 or even 95 per cent. "carbon," it is questionable whether *all* of the same is really *graphite* carbon or whether a large percentage is merely anthracite coal which in the laboratory also tests as carbon and which therefore, when ground in connection with graphite, cannot easily be distinguished therefrom.

# U . S . G . Co's.
## MEXICAN GRAPHITE PAINT

Chamber of Commerce
Cleveland, Ohio



Y. W. C. A. Building
Cleveland, Ohio

This peculiarity was recently brought to our attention in the following rather amusing manner:

Easily Confusible with Other Forms of Carbon

In responding to a request from a paint manufacturer for samples and prices of cheap graphite in the dry form among the samples we submitted were two qualities of graphite foundry facings, one containing about 25 per cent. and the other about 40 per cent. graphitic carbon the former, of course, being the less expensive. Upon having these samples analyzed our customer, to his surprise, received from his chemist a report showing the lower priced product to carry nearly 60 per cent. graphitic carbon.

Here is the explanation:

How Anthracite Coal May Test as Carbon

The facing containing 25 per cent. graphite was made by grinding together one ton graphite ore (analyzing 75 per cent. *graphitic* carbon), one ton crude soapstone and one ton anthracite coal screenings. Thus in three tons of product there were 75 units of *graphitic* carbon or an *average* of 25 per cent. for each ton. Counting the coal, however, as 100 per cent. carbon there were 175 units of *carbon* per three tons of product or an average of about 58 per cent. "carbon" (reported by their chemist as *graphitic* carbon) instead of only 25 per cent. as claimed by ourselves.

With the foregoing facts we will leave the reader to draw his own conclusions as to the relative values for paint purposes of *natural* amorphous graphite analyzing 85 per cent. *graphitic* carbon and artificial graphite analyzing 90 per cent. "carbon," adding only that while the natural product has been in use for a great many years and thus has to its credit the infallible test of time, the artificial graphite pigment is of recent creation and its stability is as yet but a matter of theory.

Stability of Artificial Graphite as a Pigment Only Theoretical

The question of *purity*, however, should always be paramount for obviously if not pure a graphite pigment must contain other substances—silica, iron, barytes, anthracite carbon, etc.—which, *not being impregnable under all conditions* as is graphite, are a source of weakness.

Purity Always Paramount

True, some paint makers claim the presence of silica and similar materials as desirable but upon investigation it will invariably be found that the *natural* impurities carried by the ore from which their pigment is ground are the very elements argued as beneficial—certainly a strange, not to say convenient, coincidence and yet easily explainable when one considers that it would cost money to eliminate these impurities.

The pigment in *U. S. G. Co.'s Mexican Graphite Paint* is, as previously stated, natural graphite guaranteed 85 per cent. pure.

Having now quite thoroughly discussed the different graphite pigments we desire to direct attention to the care exercised by

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT




May Company Building
Cleveland, Ohio



Equitable Building, Des Moines, Iowa
Steel erected by Pittsburg-Des Moines Steel Co.

# U . S . G . Co's. MEXICAN GRAPHITE PAINT

Regarding the Vehicle

ourselves in preparing the vehicle used in *U. S. G. Co.'s Mexican Graphite Paint* and combining it with the pigment.

About Our Linseed Oil

Fortunately our consumption of linseed oil is so considerable that for some years past we have been able to contract for the entire output of one of the best equipped plants in the Northwest wherein we enjoy the advantage of having this most important of paint materials made under our own specifications and supervision and of the very best selected Northwestern flaxseed, thus being assured of an absolutely uniform oil eliminated of all impurities and sufficiently aged to render it first-class in every respect.

Use of Dryers Minimized

We have also originated a special method of treatment which so improves the drying properties of linseed oil as to afford satisfaction in this regard without that excessive use of japans and dryers which tends to shorten the life of paint so materially.

Graphite Paint Specialists

Then, too, besides enjoying these exceptional facilities for securing just the right sort of raw materials we have the further advantage of a plant especially designed and equipped for the manufacture of *graphite* paint—for we make graphite paint *only*. Our pulverizers and separators are of a type peculiarly adapted to the proper reduction of *graphite* ore. Our mills are the kind that grind and incorporate a *graphite* pigment with its vehicle most intimately. Our mixers are thorough in their work. Our laboratory is complete. Men of experience are in charge. Every precaution is taken to ensure a high-grade paint. Nothing is left to chance.

So as specialists in graphite paint our undivided attention is centered on its proper production and the believer in graphite painting may consistently look to us for *the best*.

## THE COLOR

Sometimes prospective purchasers of paint are inclined to give preference to the lighter colors as perhaps more pleasing to the eye, and to meet this demand a few paint grinders have attempted the absurdity of preparing a line of light color graphite (?) paints.

Introduction of Coloring Pigments Detract from Durability

The natural color of graphite, a dark slate (see our Color A), can only be changed by the introduction of coloring pigments in quantity sufficient to produce the desired shade which of necessity reduces the percentage of graphite in the finished paint thus proportionately detracting from its protective value.

It is our opinion that for such structures as are usually painted with graphite paint color is a secondary consideration. In any event we regard a dark color as preferable, for in the smoky, grimy, greasy atmosphere of a manufacturing or railroad district light-colored surfaces soon become soiled and streaky—so we don't

# U . S . G Co's.
# MEXICAN GRAPHITE PAINT

**Stevens Point, Wisconsin, Post Office**
**Mansfield, Ohio, Post Office**
**Alpena, Michigan, Post Office**
James Corse, Contractor, Racine, Wisconsin

attempt the lighter shades but just make five good, durable colors:

Our Five Standard Colors

**Color A** (natural color), **Color C** (jet black),
**Color B** (dark green), **Color D** (dark brown).
**Color E** (red)

Ask for our Color Card.

## COVERING POWER

What is "Covering Power?"

The term "covering power" as here employed refers to the ability of a paint to form, when spread over a certain fixed area, a film or coating of sufficient body and opacity to afford effective protection to the surface which it covers.

Thin Coats vs. Thick Coats

A paint which will bring about this result with a *thin* coat is clearly more economical than one which must be applied thickly.

Both the first cost and the cost of maintenance are less.

How Thin Coats Reduce First Cost and Minimize Cost of Maintenance

For even though prices per gallon be the same a paint that will effectually cover two squares of surface for every one square which its competitor will cover is of a certainty less in first cost and the cost of maintenance is minimized because thin coats of proper body and opacity are, for the following reasons, *more durable* than thick coats.

The more "brushing out" a paint will stand the better will it dry and more fit will it be to unite with subsequent coats. Thick paint films instead of knitting together in the formation of one homogeneous coating have a tendency to separate and crack particularly when applied to constantly contracting and expanding metal surfaces.

Covers 1,000 Square Feet Per Gallon

*U. S. G. Co.'s Mexican Graphite Paint* under normal weather conditions will effectively coat approximately 1,000 square feet of smooth metal per gallon and other surfaces, wood or metal, in proportion according to condition and the skill of the painter. This is about three times the covering power of red lead and twice that of "mineral" paints; in other words to be equally low in first cost lead paints must be purchased at one-third and mineral paints at one-half the price of our product. In estimating one's requirements, however, due allowance should be made for waste of paint, complexity of architecture, class of labor employed, weather conditions, etc., which, in the hands of a painter of average skill makes the *per gallon* covering power of *U. S. G. Co.'s Mexican Graphite Paint* approximately as follows:

How to Estimate Quantity Needed

| | *First Coat* | *Second Coat* |
|---|---|---|
| Dressed lumber or old painted wood | 400 sq. ft. | 550 sq. ft. |
| Rough, scaly or rusty metal surface | 750 sq. ft. | 900 sq. ft. |
| Smooth or new metal surface | 900 sq. ft. | 900 sq. ft. |

and other surfaces, wood or metal, in proportion according to condition.

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

**Briar Cliff Manor Addition, New York, N. Y.**
Terry & Tench Co., Contractors
**Evanston Public Library, Evanston, Illinois**

Thus it is seen that *U. S. G. Co.'s Mexican Graphite Paint* possesses, by virtue of its purity, both the covering power essential to reasonable first cost and the durability imperative to low cost of maintenance.

## PAINT ECONOMY

It has been well said that—

"The economic value of a paint is the sum total of the cost of the material and its application divided by the number of times of renewal within a given term of years."

Roughly speaking but one-third of the cost of painting is consumed in the purchase of paint materials about two-thirds going for the labor of application, so the true measure of paint economy is *not price per gallon but years of service* for the labor costs of applying good paint and poor paint are the same.

The True Measure of Paint Economy

Assuming, then, that of a certain sum—say $150.00—expended in painting a given surface but one-third ($50.00) goes for the paint itself, it is clear that even by cutting the per-gallon price in two the first cost of the job is reduced only $25.00, which is about 16 per cent. of the total outlay.

Now consider—

Is this 16 per cent. really saved?

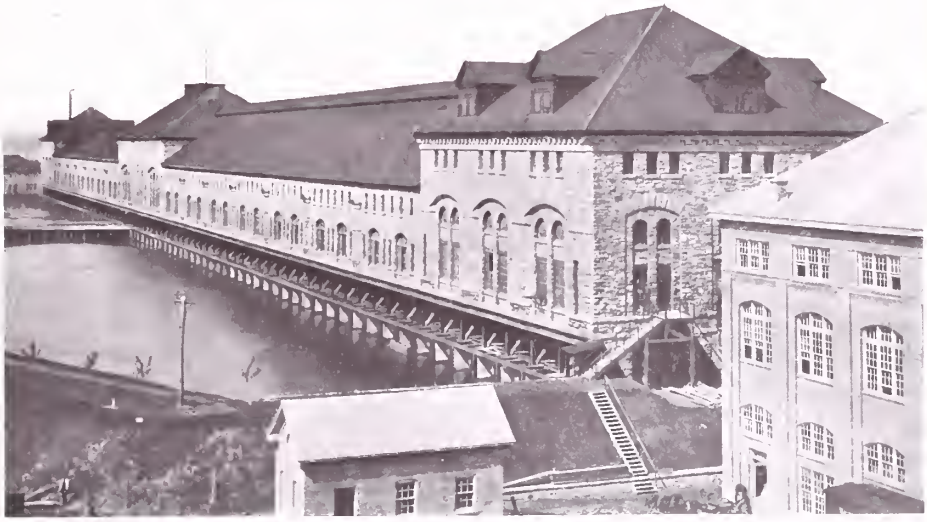
In using cheap paint one expects to sacrifice quality. You can't buy a silk dress at calico prices. When you buy paint at one-half the price asked by reputable manufacturers for good paint you are apt to get even less than half value which would mean perhaps four renewals as against two within a period of say fifteen years. In the instance above cited this would represent the outlay of $500.00 as against $300.00 or an average yearly cost of maintenance of $33.33 as against $20.00—an increase of 66 per cent.; in other words *to reduce first cost sixteen per cent. the cost of maintenance is increased sixty-six per cent.* by reason of the expense attending two extra renewals.

How the Item of Labor Affects the Cost of Maintenance

So much with regard to the painting of surfaces accessible for renewal coats. The protection of inaccessible surfaces such as the steel skeletons of our modern skyscrapers is, we are sure the reader will agree, of even greater importance for here the risk involved through weakening by corrosion is so enormous as to warrant every possible precaution. Only paint of demonstrated merit made by a manufacturer of known and unquestioned integrity should be considered.

Buy From a Responsible Maker

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT



Northern Michigan Power Company, Sault Ste. Marie, Michigan
Gottfried Brewing Company, Chicago, Illinois

# U . S . G . Co's. MEXICAN GRAPHITE PAINT

## IN A NUTSHELL

Condensed Information

you will secure in *U. S. G. Co.'s Mexican Graphite Paint* a protective coating of

(1) reasonable first cost
(2) low cost of maintenance
(3) maximum durability
(4) proper covering power
(5) satisfactory drying properties
(6) excellent working qualities

First Cost and Cost of Maintenance

*Reasonable first cost* because of reasonable price and large covering power.

*Low cost of maintenance* because of durability.

Durability

*Maximum durability* because our Mexican Graphite by reason of its uniform purity is an absolutely inert pigment and as such not only has no deleterious effect on oil and no corrosive action on metal, but is absolutely unaffected by smoke, water, brine, acids, alkali, extreme temperatures, steam, moisture, sulphur fumes or, in fact, by any chemical or climatic condition. Then, too, as has already been pointed out, it is susceptible of minute pulverization and of such a nature as to combine readily and intimately with the vehicle which consists of pure linseed oil made under our own specifications and supervision and specially treated in a manner to ensure satisfactory drying with minimum use of dryers. Its elasticity permits its use on metal surfaces without cracking, scaling or peeling with the contraction and expansion of the surface which it covers. It is adhesive.

Covering Power

*Proper covering power* because it may be spread over a greater than ordinary area and still form an opaque and waterproof coating of good body—a coating which will unite homogeneously with subsequent applications.

Drying Properties

*Satisfactory drying properties* because it will dry within a reasonable length of time without the excessive use of strong dryers.

Working Qualities

*Excellent working qualities* because it will spread easily on iron, steel or galvanized iron surfaces without running even in cold weather and does not settle hard in bottom of package.

Testimonial Letters

In substantiation of these claims we have on file a great many letters which have been written to us from time to time by satisfied users of the paint which we make.

A few of these letters are printed on the following pages.

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT



Philadelphia & Reading Coal and Iron Company Dock, Superior Wisconsin




Savannah Brewing Company, Savannah, Georgia

# U . S . G . Co's. MEXICAN GRAPHITE PAINT

## DEPARTMENT OF THE NAVY

**Address Bureau of Equipment, Navy Department, and Refer to No. 190,451**

Washington, D. C., Feb. 2, 1909.

The United States Graphite Co.,
Saginaw, Michigan.

Approved by the U. S. Navy Department

*Gentlemen:*

1. The Bureau informs you that, after a careful comparison of graphite paints at the Navy Yard, New York, it has found your product to be equal in efficiency and durability to others of its class.

2. This comparison will be considered in the award of future contracts.

Very respectfully,
(Signed) Wm. S. Coulis,
Chief of Bureau of Equipment.

## WAR DEPARTMENT

**Office of Chief of Ordinance**

Washington, May 14, 1907.

The United States Graphite Co.,
Saginaw, Mich.

*Gentlemen:*

Approved by the U. S. War Department

Referring to your letter of June 12, 1906 (17883–127), I am instructed by the Chief of Ordinance to enclose herewith report of the test of the paints therein referred to. A circular letter has been sent to the Ordinance establishments authorizing them to consider your special green paint and special drab paint in competition with others for use on guns and gun carriages. It is of course understood that the paint they are authorized to consider shall be the same as that tested.

Very respectfully,
(Signed) Lamson M. Fuller,
Major, Ord. Dept., U. S. A.

## CITY OF CLEVELAND

**Department of Charities and Corrections**

United States Graphite Co.,
Saginaw, E. S., Mich.

Cleveland, Ohio, Nov. 14, 1892.

*Gentlemen:*

As a Roof Paint

We are pleased to advise you that your paint which we applied to the roofs of our buildings has given entire satisfaction thus far and we think it will show an endurance that will amply justify your claim for economy.

Yours, etc.,
(Signed) W. S. Patterson,
Superintendent.

## PENNSYLVANIA ICE COMPANY, Ltd.

Altoona, Pa., June 5, 1893.

The United States Graphite Co.,
Saginaw, Mich.

*Gentlemen:*

Unaffected by Brine, Steam or Ammonia

During March we purchased from you a considerable quantity of Graphite Paint and since then have used it very extensively in and about our factory, and we desire to say that it has given us the utmost satisfaction and is superior in every way to any paint we have ever used.

We have used it upon our steam, brine and ammonia pipes, and as far as we are able to judge the paint remains unchanged in appearance and is not affected in any way.

We take pleasure in recommending it to those who desire a paint that is proof against heat, moisture or brine.

Yours sincerely,
(Signed) Pennsylvania Ice Co., Ltd.
F. H. Seely, Mgr.

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

Smelter at Garfield, Utah
American Smelting & Refining Company

# U . S . G . Co's. MEXICAN GRAPHITE PAINT

### SWIFT & COMPANY
**Union Stock Yards**

Efficient Under Severe Exposure

The United States Graphite Co., Chicago, Dec. 26th, 1892.
Saginaw, Mich.

*Gentlemen:*

We have tried many kinds of protective paints for exposed iron work and find your Graphite Paint gives us the best satisfaction.

Yours respectfully,
(Signed) H. A. Bower,
Master Mechanic.

---

### UNION STOCK YARD & TRANSIT CO. OF CHICAGO, ILL.

U. S. Graphite Co., Chicago, Dec. 20, 1902.
Saginaw, Mich.

*Gentlemen:*

As requested by you, we have tested your graphite paint by applying it to the screens in the sheep house where it comes in contact with the fumes of ammonia, and are pleased to say that it has stood the test better than anything we have ever used heretofore. The bbl. order given you recently will assure you that the same was satisfactory.

Yours very truly,
(Signed) W. G. Morgan,
Acting Purchasing Agent.

---

### CHICAGO BRIDGE AND IRON CO.

Chicago, August 28th, 1902.

United States Graphite Co.,
Saginaw, Mich.

For Structural Steel

*Gentlemen:*

We take pleasure in stating to you that after five years experience with Mexican Graphite Paint as manufactured by you we find it thoroughly satisfactory and expect to continue its use indefinitely.

Yours truly,
(Signed) Chicago Bridge & Iron Co.,
By Henry W. Wilder, Sec'y.

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### WISCONSIN BRIDGE AND IRON CO.

U. S. Graphite Co., North Milwaukee, Wis., Nov. 7, 1902.
Saginaw, Mich.

*Gentlemen:*

In reply to yours of the 17th inst. we are pleased to state that we have used the Mexican Graphite Paint for over five years, and are satisfied that it is as good as any graphite paint manufactured. We are using it wherever no other paint is specifically called for in specifications.

Yours respectfully,
(Signed) Wisconsin Bridge & Iron Co.,
By H. A. Wagner,
Sec'y and Treas.

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### KENWOOD BRIDGE CO.

U. S. Graphite Co., Chicago, Nov. 19, 1902
Saginaw, Mich.

For Bridge Painting

*Gentlemen:*

We beg to say in response to your inquiry that we have used your Mexican Graphite Paint for several years and found that it has given very general satisfaction and take pleasure in giving you this testimonial.

Yours very truly,
(Signed) Kenwood Bridge Co.,
By F. W. Barker,
President.

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

Tenth Avenue Bridge, Minneapolis, Minnesota
Coal Docks, Duluth, Missabe & Northern R. R. Co.

# U . S . G . Co's. MEXICAN GRAPHITE PAINT

■ ■ ■ ■ ■

### MICHIGAN MILLING CO.

Ann Arbor, Mich., Jan. 10, 1908.

The United States Graphite Co.,
Saginaw, Mich.

*Dear Sirs:*

We have for a number of years used your Graphite Paint with good results. We have this year painted five elevators on four of which we have used the Graphite Paint. We would have done so in the fifth case but for a peculiar condition existing. We send with this letter a photograph of our Vernon elevator, one of those which we have just painted. This was last *painted with Graphite paint, ten years ago, and while the paint had been worn somewhat by the elements the building was still protected from the weather.* We make these statements as they may be of interest to you. We are,

Resists Elements for Ten Years

Yours truly,
(Signed) Michigan Milling Co.,
Per G. F. Allmendinger, Secretary.

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### SAVANNAH BREWING COMPANY

Savannah, Ga., Dec. 17, 1913.

The United States Graphite Co.,
Saginaw, Mich.

*Gentlemen:*

In answer to your inquiry beg to say, that we have used your Mexican Graphite paints in every way, on brine tanks, coils, water pipes, and on everything that we could think of, and we have found it to be absolutely up to everything that you promised. After a great many years of experience with all kinds of paints, we are candid to say that Mexican Graphite is the very best for purposes for which we have used it, and we will heartily recommend it to anyone desiring a paint that will give absolute satisfaction.

Mexican Graphite Paint Best

Yours very truly,
Savannah Brewing Company.
W. W. Starr, Manager.

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### BRADLEY-RAMSEY LUMBER CO.

Lake Charles, La., March 3, 1892.

The United States Graphite Co.,
Saginaw, Mich.

*Gentlemen:*

You may ship us any time within thirty days three barrels of your Graphite Paint, for our mill roofs. Consign same as previous shipments. We find it to be the best material we ever used. Our trouble here has been to get a paint that would be impervious to the peculiarities of the climate, especially the salt air from the gulf. Your paint does the business to our entire satisfaction.

Impervious to Salt Air Exposure

Very respectfully yours,
(Signed) Bradley-Ramsey Lumber Co.,
By Wm. E. Ramsey, President.

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### JAMES CORSE, GENERAL CONTRACTOR

Racine, Wis., Jan. 7, 1914.

The United States Graphite Co.,
Saginaw, Mich.

*Gentlemen:*

In regard to the graphite paint which you have furnished us for almost all the post offices which we have constructed, desire to say that in every instance the material supplied by your firm has been very acceptable to the Government Officials and that we have had no cause of complaint or trouble regarding the same.

Acceptable to the Government Officials

Respectfully,
James Corse.
By Wm. F. Kachel, C. E.

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT



**United States Government Viaduct, Rock Island, Illinois**

Ralph Modjeska, Chicago, Illinois, Engineer

Bayne & Howitt, Minneapolis, Minnesota, Contractors

# U . S . G . Co's. MEXICAN GRAPHITE PAINT

### SANDUSKY GRAIN CO.

Sandusky, Mich., June 27, 1908.

The United States Graphite Co.,
Saginaw, Mich.

*Gentlemen:*

Cheaper than 35c. Paint for Elevator Painting

In reply to yours of the 25th. Would say that so far we are very well pleased with results of your green Graphite Paint and will very likely need another half-barrel within a short time.

We are receiving many compliments on the looks of our plant since painting with this color as it is a contrast to the other plants thru this section. Its covering ability is quite remarkable and we think at this price it is much cheaper to cover the surface than with 35c Coal Tar compounds.

Yours very truly,
(Signed) Sandusky Grain Co.,
A. L. Chamberlain, Mgr.

### THE INGALLS IRON WORKS CO.

Birmingham, Ala., Dec. 20, 1913.

The United States Graphite Co.,
Saginaw, Mich.

Gives Entire Satisfaction on Important Buildings

*Gentlemen:*

Replying to your favor of the 16th, wish to say that we have used your Graphite Paint on some of the most important buildings and structures in this district and it has always given us entire satisfaction. It gives us pleasure to endorse it.

Yours respectfully,
The Ingalls Iron Works Company.
By Wm. F. Thornton, Sec. and Treas.

**Springfield Gas Light Co.,**
Springfield, Ill.
**Peoria Gas & Electric Co.,**
Peoria, Ill.
**Evansville Gas & Electric Light Co.,**
Evansville, Ind.
**Williamsport Gas Co.,**
Williamsport, Pa.
**Saginaw City Gas Co.,**
Saginaw, Mich.
**Bay City Gas Co.,**
Bay City, Mich.
**Kalamazoo Gas Co.,**
Kalamazoo, Mich.
**Pontiac Light Co.,**
Pontiac, Mich.
**Jackson Gas Co.,**
Jackson, Mich.

Office of

**W. H. BARTHOLD,**

**Consulting Engineer**

**New York, N. Y.,**
October 2, 1907.

CIRCULAR LETTER No. 17 TO MANAGERS OF BRANCHES

### HOLDER PAINT

*Dear Sir:*

For Gas Holders

After many years experience we have found that the best paint for holders is graphite paint, and we have found, too, that of the different graphite paints on the market that made by The United States Graphite Company is the best.

For, while it seems at first thought to be a little more expensive than some paints, its greater covering power more than offsets any reasonable difference in price so far as first cost is concerned, and then, too, it is so much more durable that we regard it as the cheapest paint we can buy.

I wish hereafter you would paint your holders with nothing but U. S. G. Co.'s Mexican Graphite Paint in its natural color. On the guide framing, however, may be used their Color "D" (Dark Brown) as this combination of colors

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

United States Government Dam, Locks and Bridges
Illinois and Mississippi Canal

# U . S . G . Co's. MEXICAN GRAPHITE PAINT

gives the holders a very attraetive appearanee. This paint should be bought direct from The United States Graphite Co., Saginaw, Mieh.

Before again painting any holders, if you eannot see your way elear to do as above requested, please take the matter up with me.

Yours truly,
(Signed) W. H. Barthold.

Copy to—

| | | | |
|---|---|---|---|
| W. R. R. | Springfield | F. W. B. | Kalamazoo |
| E. W. E. | Peoria | C. A. B. | " |
| H. D. | Evansville | T. J. W. | Pontiae |
| S. B. S. | Saginaw | H. M. E. | Jaekson |
| S. B. | Bay City | | |

Made Both Field and Laboratory Tests

Prior to issuing the above instruction to his Branch Managers Mr. Barthold, besides conducting a number of very thorough and comprehensive field tests stretching over a period of several years, took the additional precaution to submit samples of three of the most widely advertised makes of Graphite Paint (inclusive of our own and all of which had previously been tested in the field) to one of the most prominent chemists in the United States with the following results:

## J. H. MATTHES

**Laboratory for Practical Research and Industrial Development**
**36 LaSalle St.**

Chicago, Ill., Sept. 13, 1907.

Mr. W. H. Barthold, Consulting Engineer,
C/o Hodenpyl, Walbridge & Company,
7 Wall Street,
New York City.

Comparative Analyses of Several Well Known Brands

*Dear Sir:*

We submit the following report on the investigation of three samples of graphite paint reeently submitted:

We have designated the samples as follows:

#1. *U. S. G. Co.'s Mexican Graphite Paint,*
The United States Graphite Co.,
Saginaw, Mich.

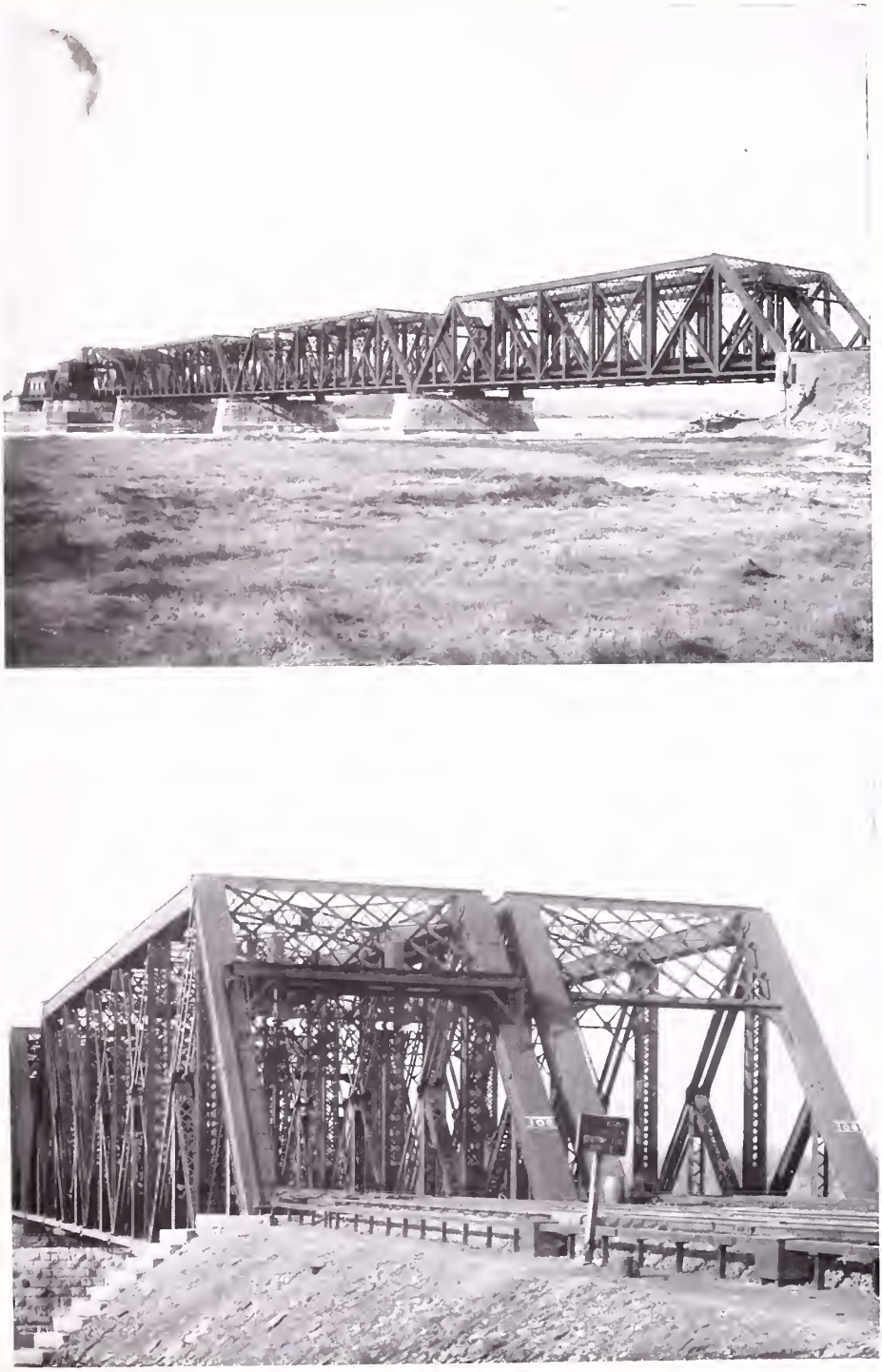
#2. (Name of Maker will be given on request.)
#3. (Name of Maker will be given on request.)

The paints will hereafter be designated by their numbers.

Complete Analysis

| | | | Paint No. 1 | Paint No. 2 | Paint No. 3 |
|---|---|---|---|---|---|
| **Linseed Oil** | | per eent. | 69.35 | 57.89 | 55.16 |
| Moisture | | " " | .20 | .40 | .40 |
| **Graphitic Carbon** | | " " | 24.43 | 13.44 | 13.68 |
| Combined Moisture | | " " | .79 | 1.60 | .51 |
| **Insoluble Silica** | | " " | .66 | 7.07 | 13.56 |
| **Soluble Silica** | | " " | 1.74 | 5.49 | 5.48 |
| Iron Oxide | ($Fe_2O_3$) | " " | .33 | 1.37 | 3.46 |
| Titanium Oxide | ($TiO_2$) | " " | .13 | .35 | .66 |
| Alumina | ($Al_2O_3$) | " " | 1.70 | 4.12 | 5.74 |
| Calcium Oxide | (CaO) | " " | .28 | .35 | .26 |
| Magnesium Oxide | (MgO) | " " | .21 | .85 | .22 |
| Manganese Oxide | (MnO) | " " | trace | .11 | .16 |
| Lead Soap from drier | | " " | .63 | .... | .20 |
| Manganese Soap from drier | | " " | .05 | .... | .39 |
| Resinate of Lead | | " " | .... | 1.50 | .... |
| Resinate of Manganese | | " " | .... | 1.07 | .... |
| Potassium | | " " | .... | trace | .... |
| Rosin | | " " | .... | 3.84 | .... |

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT



New York, New Haven & Hartford R. R. Co.

# U . S . G . Co's. MEXICAN GRAPHITE PAINT

Analysis of Pigment

| | | | Paint No. 1 | Paint No. 2 | Paint No. 3 |
|---|---|---|---|---|---|
| **Graphitic Carbon** | | per cent. | **84.05** | **42.60** | **32.27** |
| Combined Moisture | | " " | 2.20 | 20.02 | 30.96 |
| Insoluble Silica | | " " | 5.83 | 15.54 | 12.51 |
| Soluble Silica | | " " | | | |
| Iron Oxide | ($Fe_2O_3$) | " " | 1.10 | 3.88 | 7.87 |
| Titanium Oxide | ($TiO_2$) | " " | .44 | 1.00 | 1.51 |
| Alumina | ($Al_2O_3$) | " " | 5.69 | 11.68 | 13.54 |
| Calcium Oxide | (CaO) | " " | .93 | 1.00 | .60 |
| Magnesium Oxide | (MgO) | " " | .71 | 2.45 | .49 |
| Manganese Oxide | (MnO) | " " | trace | .30 | .37 |

From the analysis it can readily be seen that Paint No. 2 contains a large amount of clayey matter and also much added silica. The *U. S. G. Co.'s Mexican Graphite Paint* (No. 1) contains no minerals intentionally added. The residue is an impure clay. Paint No. 3 contains added silica as well as large amounts of clayey matter. It also contains much iron.

Fineness of Pigment

Our tests show that the graphite in Paint No. 2 is the coarsest. Other things being equal the more finely ground the pigment, the more uniform will be the coating. We fail to see the superiority of flake graphite as a pigment. It is highly improbable that the flakes will arrange themselves in an even, symmetrical layer; on the contrary it is very likely that they will overlap and thus increase the tendency to scale. While the fineness of the pigment is an important factor in the quality of the paint, one must not disregard the composition of the pigment when considering the durability of the paint.

Graphite vs. Silica as a Pigment

Pure carbon, even lamp-black, ground in good linseed oil, will make an extremely durable coating, the reason for this being that an inert material like carbon surrounding itself with and absorbing large quantities of linseed oil, is better able to stand corrosion than more chemically active materials, such as clays. Analysis shows that in the pigment from Paint No. 2 there is but 38.08% graphite and about an equal amount of clay and 20.02% of insoluble silica. Paint No. 3 contains in the pigment 31.10% graphite, about the same amount of clay and 30.96% insoluble silica. In the *U. S. G. Co.'s Mexican Graphite Paint* (No. 1) the pigment consists of 81.42% of graphite, about 16% clay and 2.20% insoluble silica. From this it must be evident that the latter pigment is superior to the other two. It requires from 6 to 8 gallons of oil to make 100 pounds of graphite into a paste; whereas, for a like quantity of silica but 2.5 7 gallons are required. Therefore, a paint containing much insoluble silica can be made cheaper than a nearly pure graphite paint, but its value is proportionately lessened.

Analysis of Vehicle

| | | Paint No. 1 | Paint No. 2 | Paint No. 3 |
|---|---|---|---|---|
| **Linseed Oil** | per cent. | **98.10** | **89.17** | **98.40** |
| Unsaponifiable matter | " " | .92 | .86 | .92 |
| Lead Soap | " " | .89 | .... | .36 |
| Manganese Soap | " " | .09 | .... | .68 |
| Lead Resinate | " " | | 2.33 | |
| Manganese Resinate | " " | | 1.68 | |
| Rosin | " " | | 5.96 | |

The carrier in all cases is a linseed oil. In Paint No. 2 the oil has been treated with metallic resinate, thus accounting for the presence of rosin and resinates in the analysis. This gives the oil a dark color but makes it a quick drier although their presence in large quantities is detrimental to the paint.

Both the *U. S. G. Co.'s Mexican Graphite Paint* (No. 1) and Paint No. 3 contain small percentages of driers but no rosin. In no case was there any mineral oil present, as careful analysis showed, although the samples do contain appreciable quantities of unsaponifiable matter. It is a well-known fact that pure linseed oils do contain small amounts of unsaponifiable matter. We refer to the work of Niegemann in the Chemische Zeitung, page 97, (1904) and of Fahrion in the Zeitschrift fur Angewandt Chemie, page 1193 (1903).

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

Alton Light & Traction Co., Alton, Illinois
Alton, Granite City & St. Louis Traction Co., Mitchell, Illinois
Kenwood Bridge Co., Chicago, Illinois, Contractors.

# U . S . G . Co's. MEXICAN GRAPHITE PAINT

Comparison of Heat Resistance

| | Per cent. loss on 1 gram sample Paint No. | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| During 1st ten-minute period of ignition | 20.94 | 26.68 | 37.45 |
| " 2nd " " " " | 19.03 | 16.95 | 24.03 |
| " 3rd " " " " | 22.90 | 19.05 | 16.96 |
| " 4th " " " " | 19.36 | 19.02 | .07 |
| " 5th " " " " | 15.19 | 10.39 | |
| " 6th " " " " | 1.50 | 1.50 | |
| " 7th " " " " | .04 | .20 | |

Our object was to ascertain the relative hardness of the graphites by noting their resistence to heat. The method is as follows: A gram of the purified carbon was weighed into a platinum crucible and the latter heated in a vertical position over a Chaddock burner for exactly ten minutes. After cooling the crucible was weighed and its contents thoroughly stirred with a platinum wire and again ignited for ten minutes. This process was continued until the loss in weight was insignificant. In all cases the same burner and the same flame were used so that our results are comparable with each other. We have expressed our results as the percentage loss of the pure carbon after ignition for successive ten minute periods.

Our data show that in seventy minutes, practically all of the purified graphite from Paint No. 2 can be burned off; the same is true for the *U. S. G. Co.'s Mexican Graphite Paint* (No. 1). In thirty minutes the graphite from Paint No. 3 is burned away almost entirely, showing it to be soft and easily consumed. Our work on the composition of these pigments in the combustion furnace has verified the above deductions.

Very truly yours,
(Signed) J. H. Matthes.

It will be seen from the foregoing analysis that in Paint No. 2 less than one-half and in Paint No. 3 less than one-third of the pigment is graphite and that our pigment contains twice as much graphite as the former and nearly three times as much as the latter.

Some Paints "Graphite" in Name Only

It will also be observed that as these other brands (names on request) contain less graphite than silica and other substances they are really "graphite" paints in name only—*so called in order to help sell them*—silica and similar materials being purposely added in order to reduce cost of production.

As *graphite* paint, then, ours has twice the value of the one and three times the value of the other.

The Presence of Rosin Detrimental

Another consideration which we wish to point out is the greater fineness to which our pigment is ground thereby permitting more intimate incorporation with the vehicle and still another is the superior quality of our vehicle which carries no rosin or other life-shortening adulterants.

There is, however, always this to remember—

The best of paint may through careless and improper application be rendered less efficient even than poor paint which has been carefully applied to a properly prepared surface—in fact its value as a protective coating may easily be almost wholly destroyed.

Necessity of Careful Application

The application of paint, therefore, should be made after well-thought-out specifications and under intelligent supervision. We offer a few suggestions in this regard on the following page.

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

Omaha and Council Bluffs Street Railway Bridge, Iowa
West Water Street Bridge, Milwaukee, Wisconsin

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

## SPECIFICATIONS FOR PROPER GRAPHITE PAINTING

Specifications for Painting Structural Steel or Iron

**Structural Steel or Iron**—After removing all mill-scale, dirt, oil, grease and foreign matter of every description by means of wire brushes, scrapers or sand-blast, parts to be enclosed or in contact must be given one coat *U. S. G. Co.'s Mexican Graphite Paint;* and before exposure to the weather and prior to shipment from mill all structural work shall receive one coat *U. S. G. Co.'s Mexican Graphite Paint* which must be thoroughly dry before loading; after erection another coat of *U. S. G. Co.'s Mexican Graphite Paint* shall be applied, this last coat to be of a different color than the first coat, and surfaces which have been chafed or imperfectly covered shall be properly retouched and allowed to dry before making subsequent applications. If more than one coat is to be applied after erection sufficient time must be allowed to elapse between coats to permit of perfect drying. No painting shall be done in wet weather or on damp surfaces, paint must be kept well stirred while in use, application must be made in thin coats well and evenly brushed and all paint must be delivered at the job ready for use in original packages bearing the Trade Mark of The United States Graphite Co., Saginaw, Mich.

Specifications for Painting Metal Roofing, Corrugated Iron, etc.

**Metal Roofing, Corrugated Iron, Etc.**—One coat *U. S. G. Co.'s Mexican Graphite Paint* shall be applied to under-surface and same must be thoroughly dry before laying; immediately after laying clean thoroughly of all grease, dirt and foreign matter of every description and, if tin, remove all rosin at seams and apply two coats *U. S. G. Co.'s Mexican Graphite Paint*, the first coat to be *thoroughly* dry before application of second coat which must be of a different color than the first coat. No painting shall be done in wet weather or on damp surfaces, paint must be kept well stirred while in use, application must be made in thin coats well and evenly brushed and all paint must be delivered at the job ready for use in original packages bearing the Trade Mark of The United States Graphite Co., Saginaw, Mich.

Size of Packages

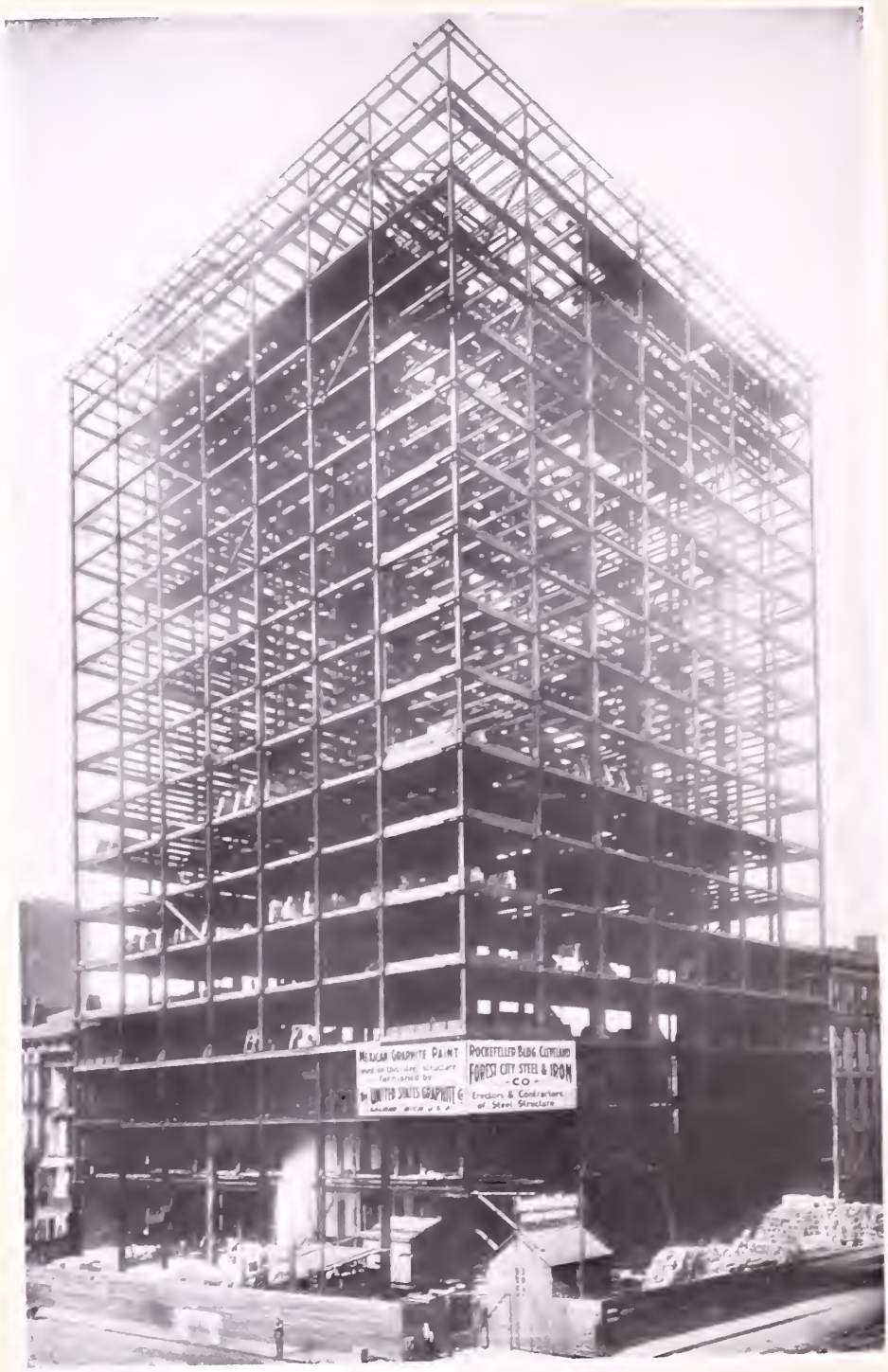
*U. S. G. Co.'s Mexican Graphite Paint* is put up in one-half and one-gallon tin pails (packed in cases of six gallons each), five and ten-gallon kits, half-barrels and barrels.

**PRICES ON REQUEST**

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

The Ohio and Colorado Smelting and Refining Company, Salida, Colorado
North End Bridge, City of Springfield, Massachusetts

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

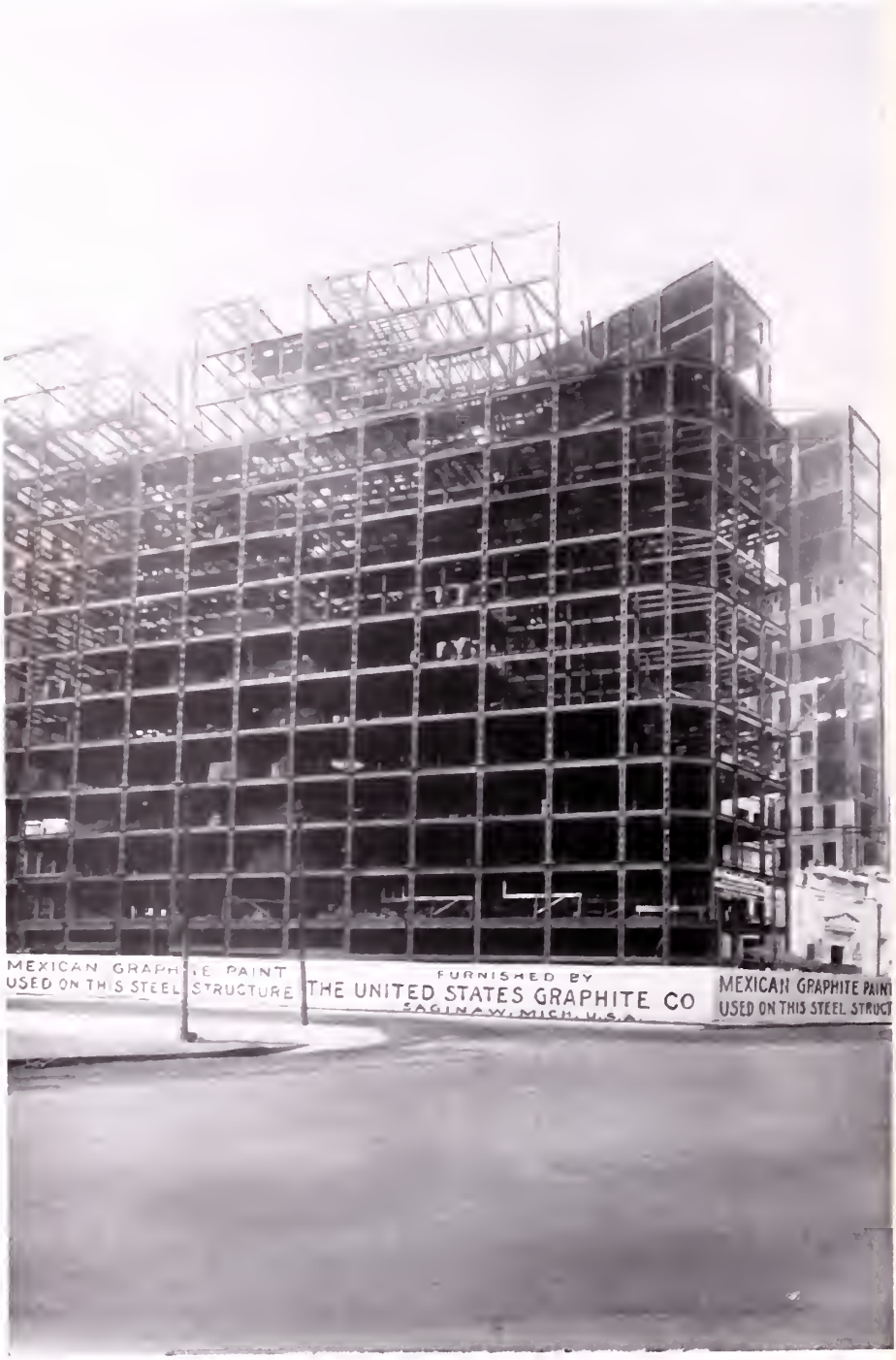



Rockefeller Building
Cleveland, Ohio

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

Rockefeller Building
Cleveland, Ohio

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT




Schofield Building
Cleveland, Ohio

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

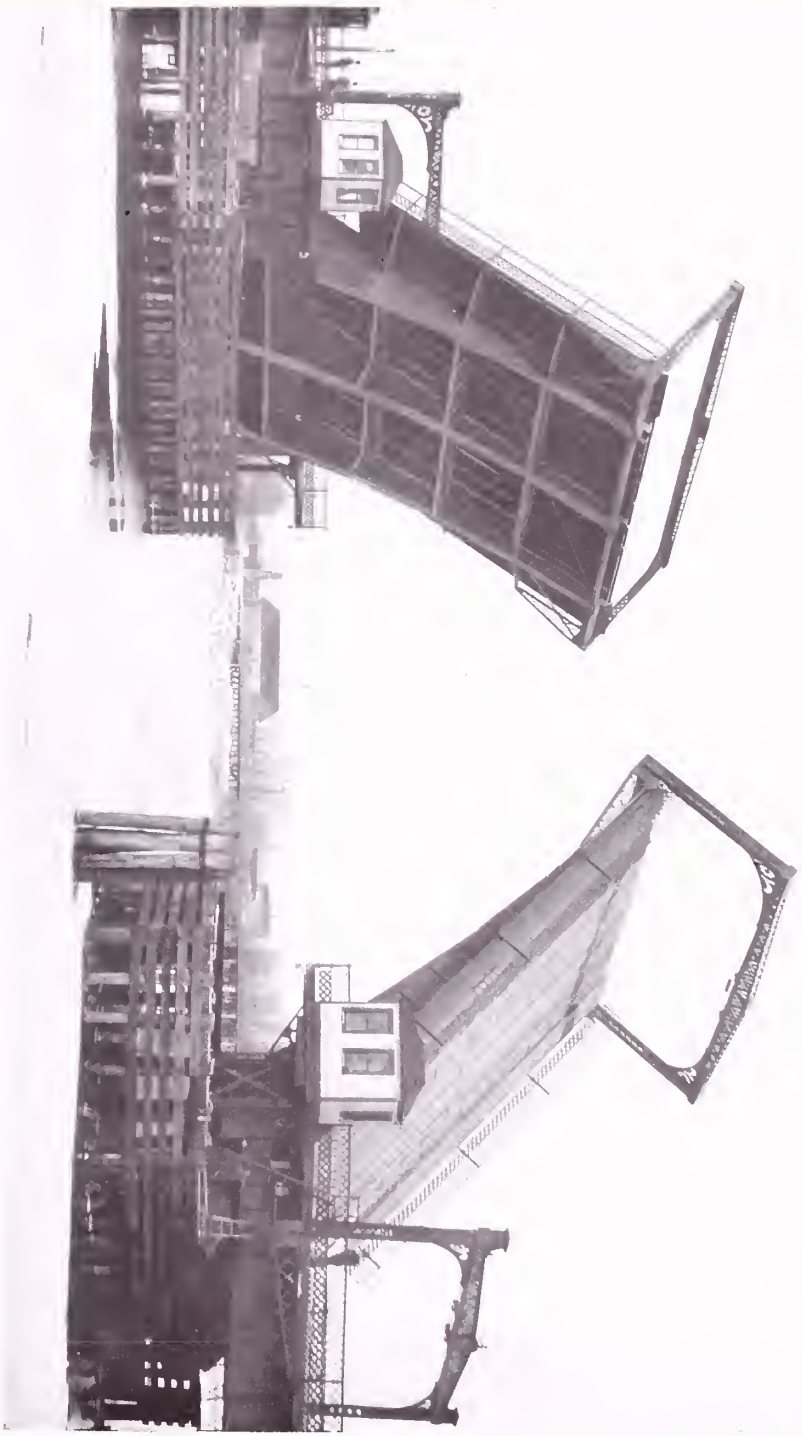
**Schofield Building**
**Cleveland, Ohio**

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

**Seventh Street Viaduct, Des Moines, Iowa**
Pittsburg-Des Moines Steel Co., Contractors

**Viaduct, Union Station Association, Detroit, Michigan**

# U . S . G Co's.
## MEXICAN GRAPHITE PAINT



Genesee Avenue Bridge, Saginaw, Michigan

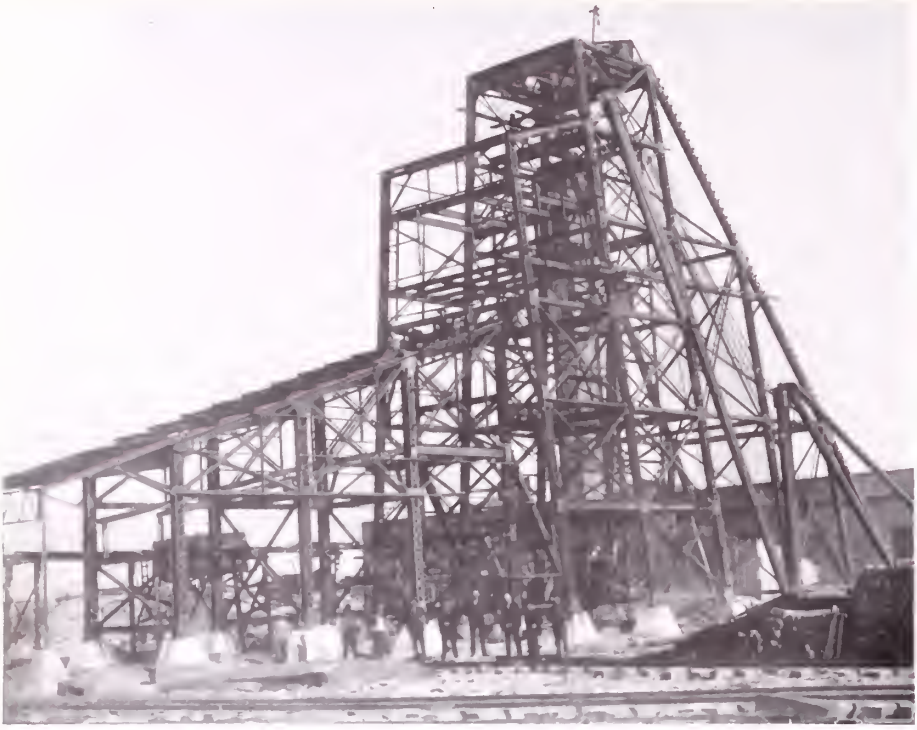
# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

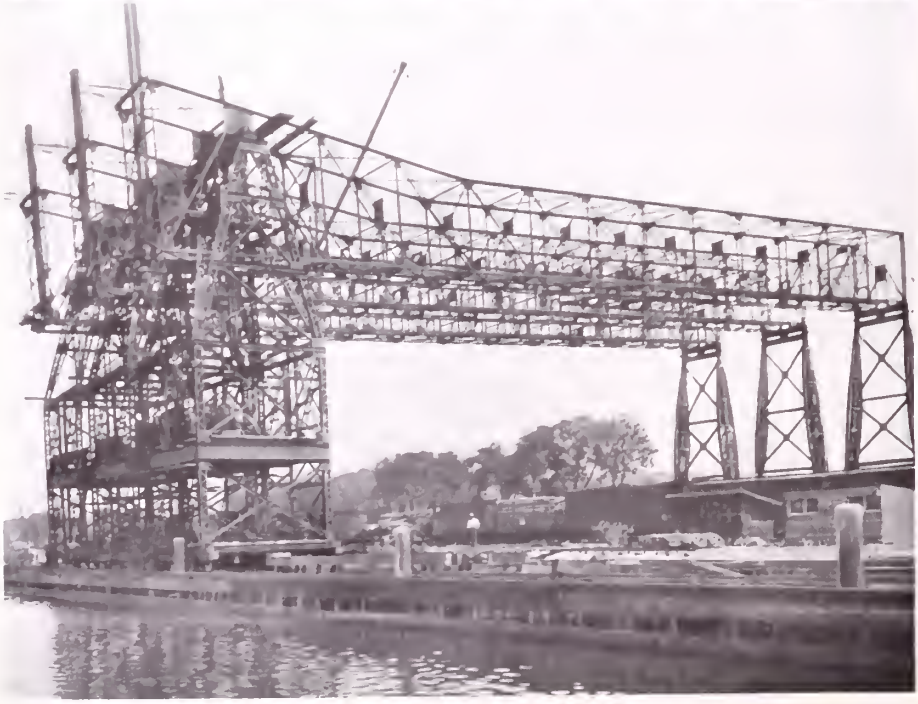
Grand Avenue Bridge, Eau Claire, Wisconsin
Zenith Furnace Co., Duluth, Minnesota

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

The Colorado Ice and Cold Storage Company, Denver, Colorado
Globe Plant, American Smelting and Refining Company, Denver, Colorado

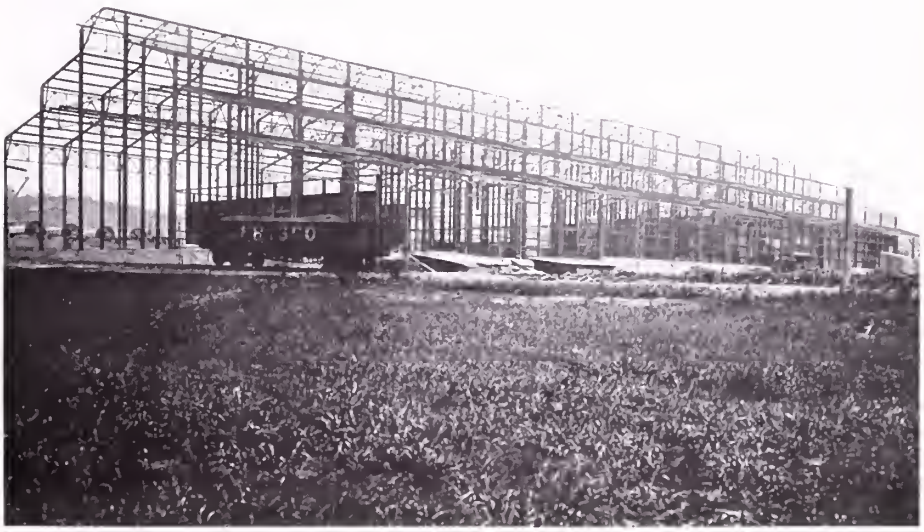
# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT





**Staunton Coal Mining Company, Staunton, Illinois**
**Western Coal & Coke Company, Green Bay, Wisconsin**
Kenwood Bridge Company, Chicago, Illinois, Contractors

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

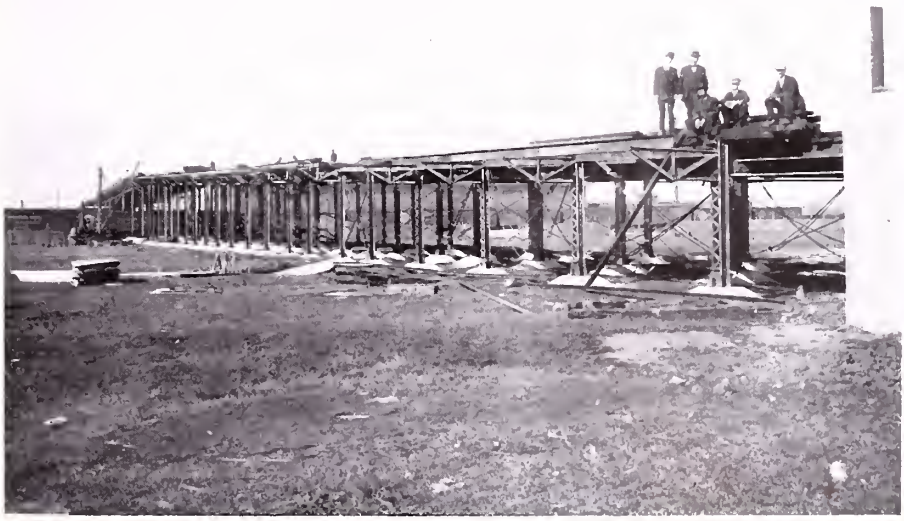


**Hutchinson Chemical & Alkali Company, Hutchinson, Kansas**
Illinois Steel Bridge Company, Kansas City, Missouri, Contractors
**Iola Portland Cement Company of Texas, Dallas, Texas**
Bellefontaine Bridge & Steel Company, Bellefontaine, Ohio, Contractors

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

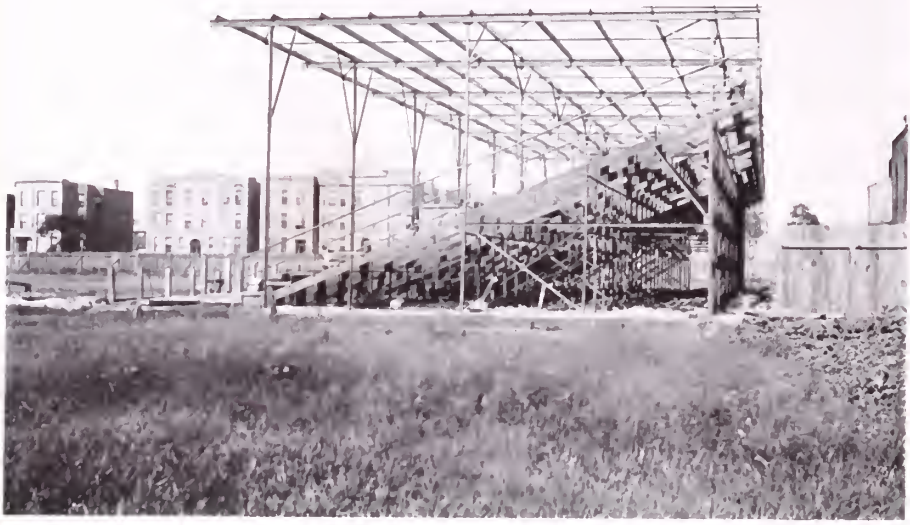
Coal Docks, Two Harbors, Minnesota
Duluth & Iron Range R. R. Company

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT



**Newton Street Viaduct**
**Algiers, Louisiana**
Owned by City of New Orleans

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT



Grand Stand, Anson's Ball Park, Chicago, Illinois
John Street Bridge, Appleton, Wisconsin

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

Foundry, The Dodge Manufacturing Company, Mishawaka, Indiana
Cement Storage Bins, Marquette Cement Manufacturing Co., LaSalle, Illinois

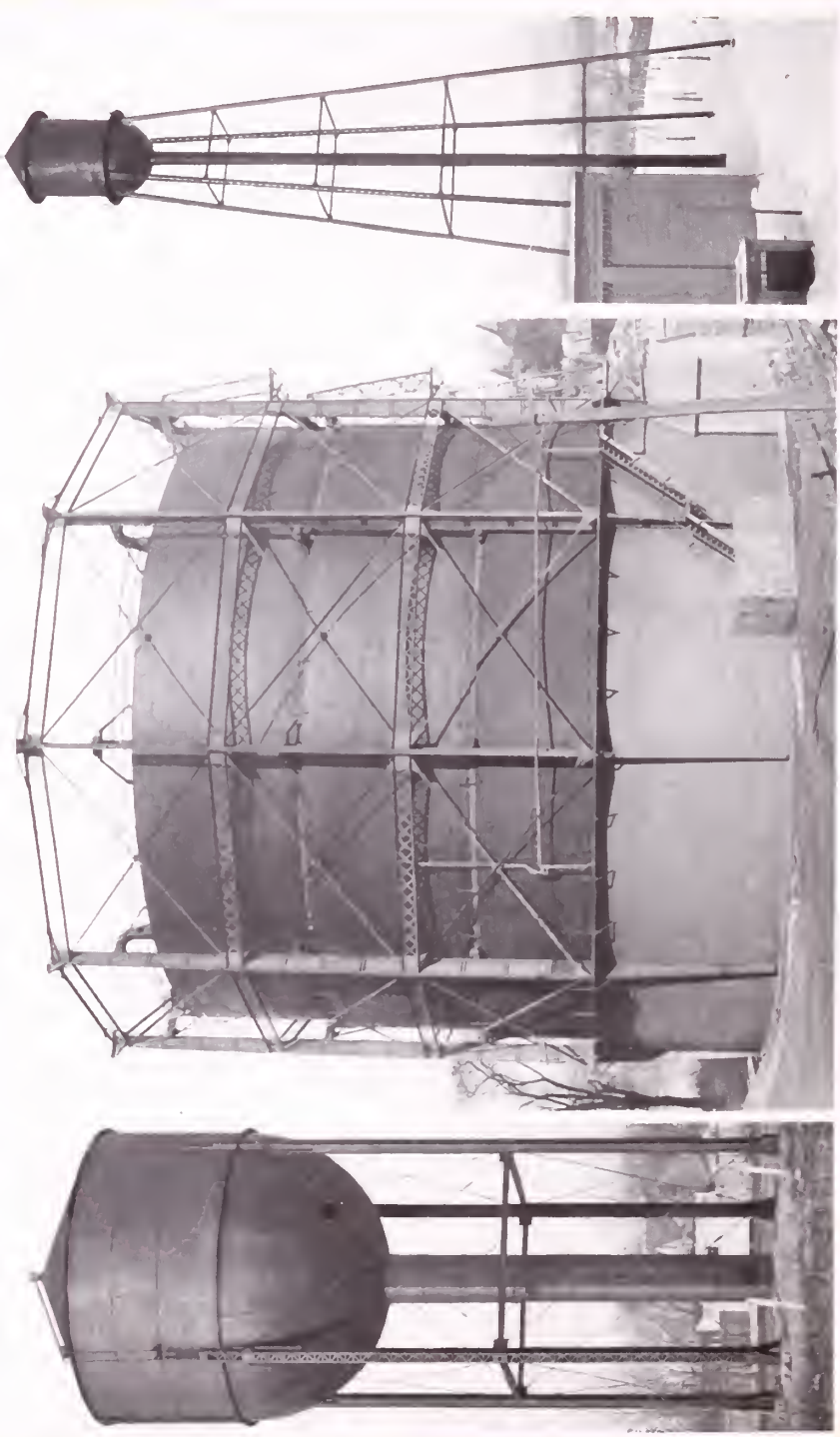
# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

**St. Vincent's College Theatre**
**John A. Lane Manual Training School**
**Chicago, Illinois**
A. Bolter's Sons, Chicago, Illinois, Contractors

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

Sheffield Elevator Company, Minneapolis, Minnesota
Jackson Gas Company, Jackson, Michigan

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

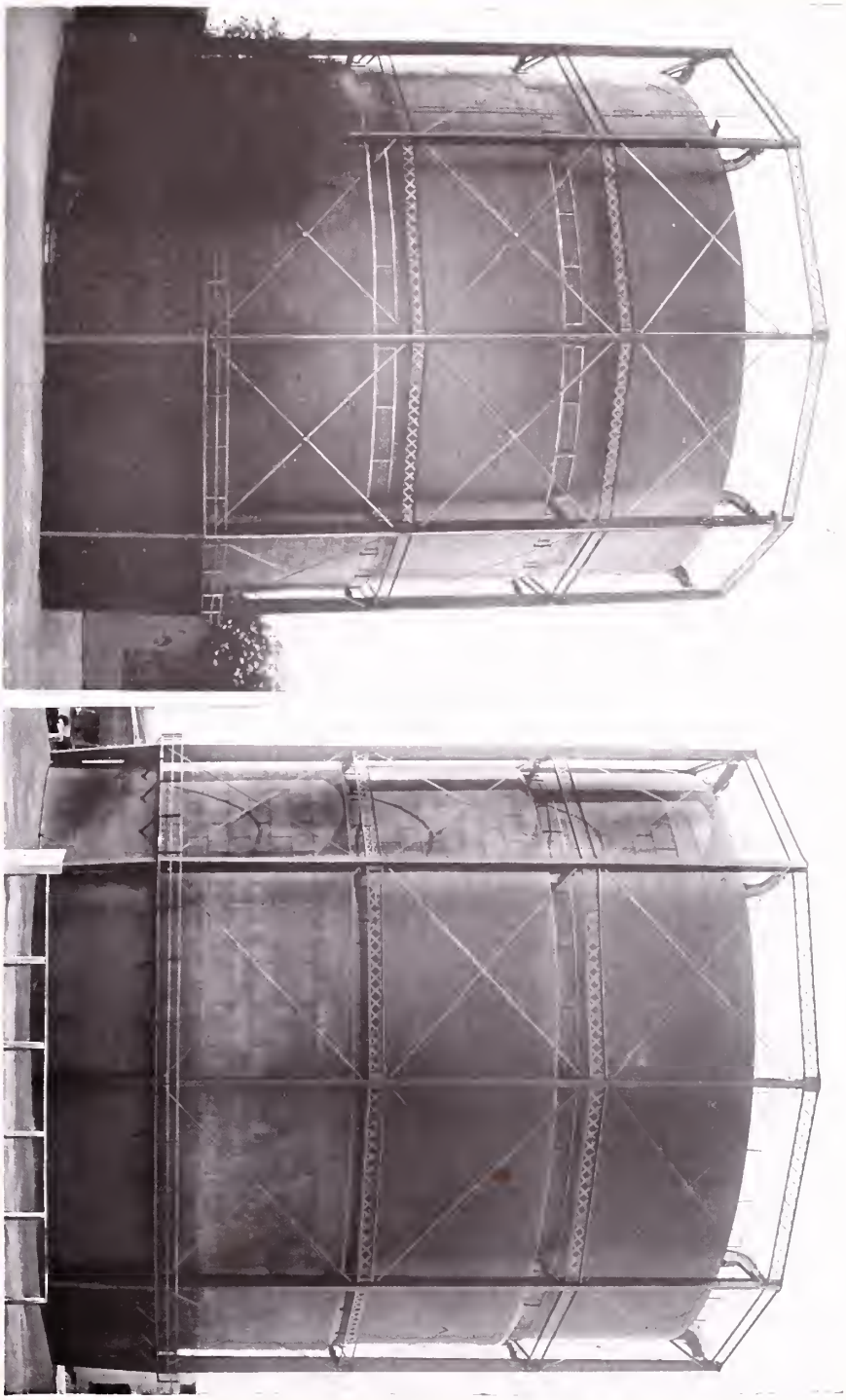


**Great-Western Sugar Company**
**Fort-Collins, Colorado**
Pittsburg-Des Moines Steel Co.
Contractors

**Blackstone Valley Gas and Electric Company**
**Woonsocket, Rhode Island**

**District of Columbia, Water Works**
**Washington, D. C.**
Pittsburg-DesMoines Steel Co.
Contractors

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT

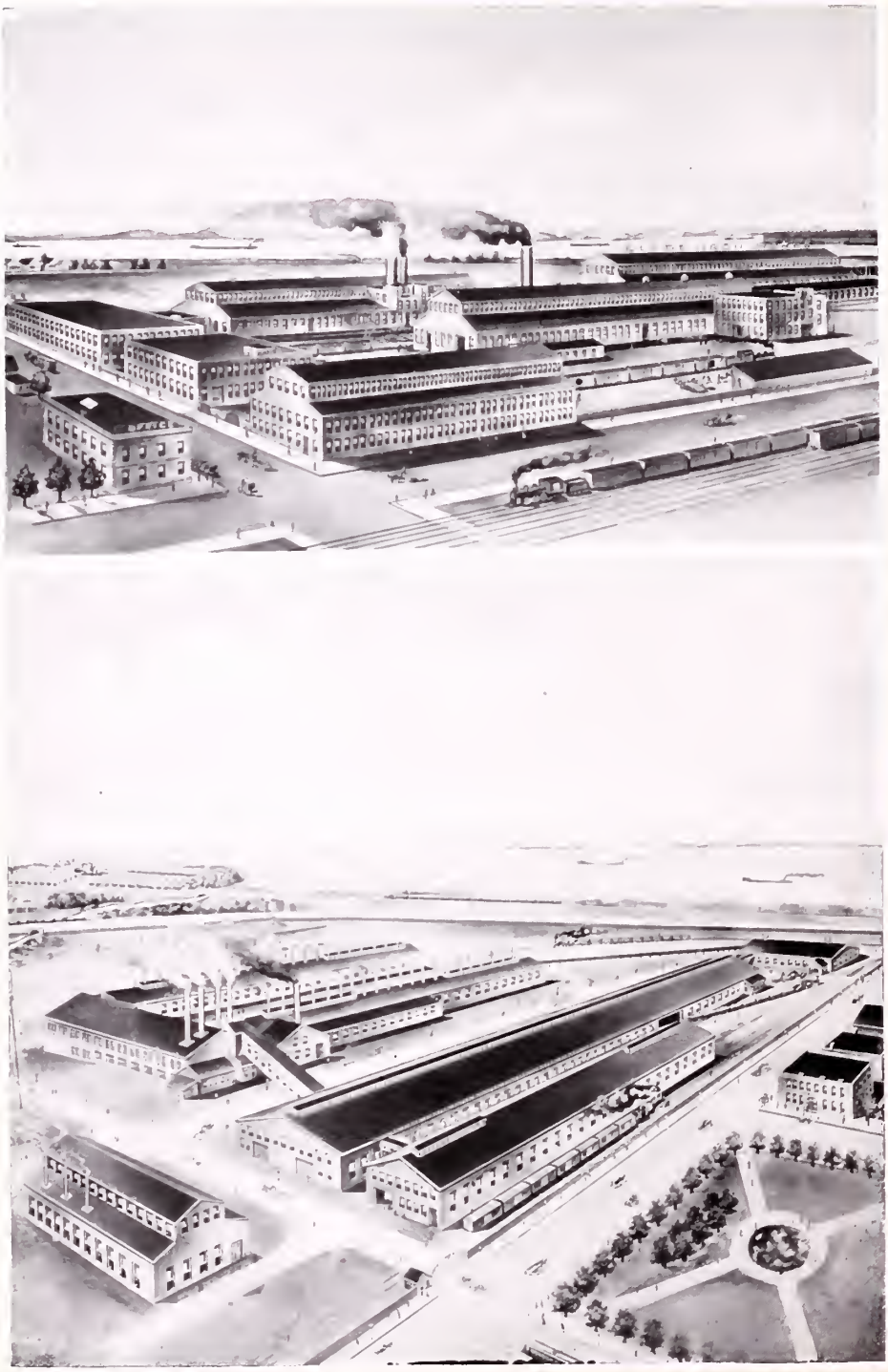


Dallas Gas Company
Dallas, Texas

Gas Holders

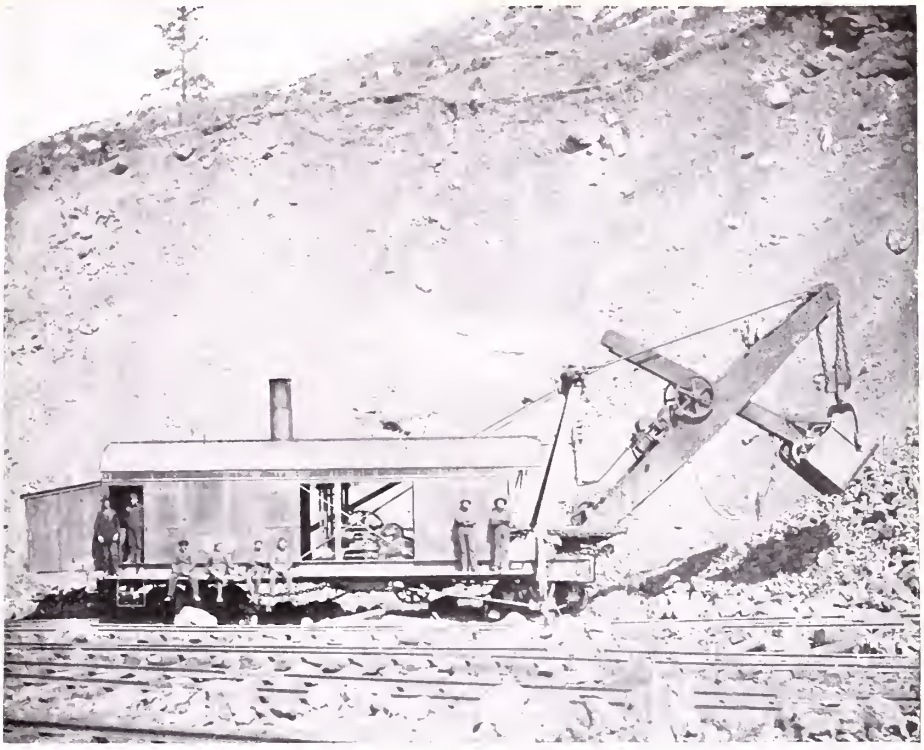
San Antonio Gas & Electric Company
San Antonio, Texas

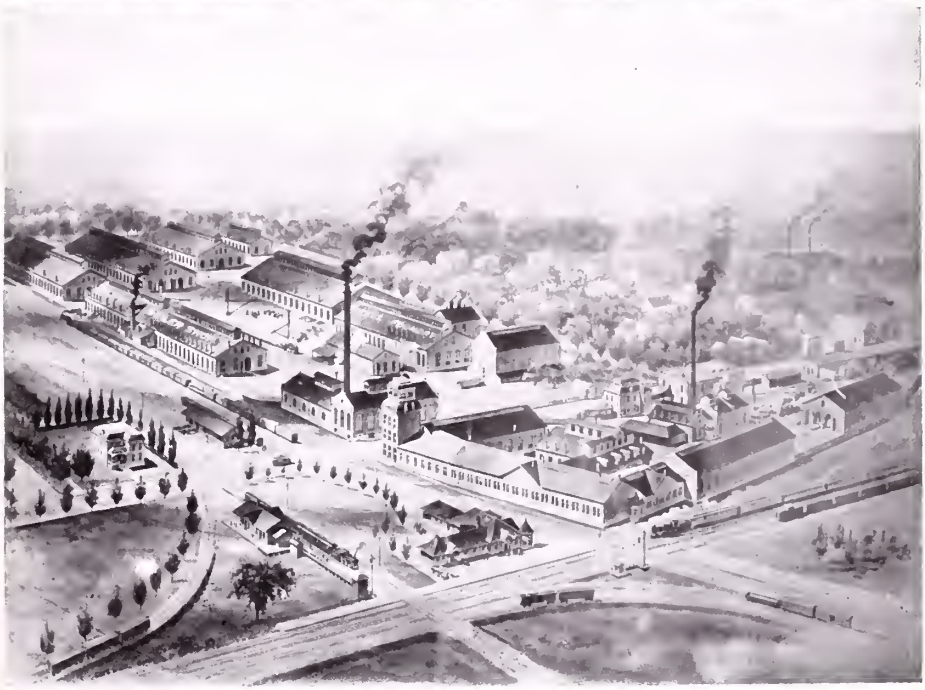
# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT



Clyde Iron Works
American Carbolite Company
Duluth, Minnesota

# U . S . G . Co's.
# MEXICAN GRAPHITE PAINT





The Marion Steam Shovel Company
Marion, Ohio

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**Federal Penitentiary, Leavenworth, Kansas**
Eames & Young, St. Louis, Architects
**Interior, Filer & Stowell Company Plant, Milwaukee, Wisconsin**
Wisconsin Bridge & Iron Company, Contractors

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**John C. Liken & Company**
**Sebewaing, Michigan**

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A Residence Owned by W. T. Cooper, Architect, Saginaw, Michigan
The East Saginaw Club

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**Fire Escapes**
**Harris Safety Company**
**Youngstown, Ohio**

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| | |
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| ATLANTA | Candler Building |
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| CLEVELAND | Leader-News Building |
| CINCINNATI | First National Bank Building |
| DETROIT | Dime Bank Building |
| CHICAGO | Railway Exchange |
| DENVER | Gas and Electric Building |
| SAN FRANCISCO | Phelan Building |
| BERLIN | Germany |
| FUERTH | Bavaria, Germany |

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